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## ATLANTIC COASTWISE CANALS: THEIR HISTORY AND PRESENT STATUS

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The Atlantic Coast offers exceptional opportunities for the realization of an efficient coastwise water route from Boston to the Carolinas. The construction of four canals, with an aggregate length of less than one hundred miles, will provide one thousand miles of protected inland navigation, while the extension of this system, by means of a canal across Florida, would connect the vast Atlantic coastwise trade with that of the Mississippi.

This system was partially realized more than three-quarters of a century ago. The Chesapeake Bay was connected with the bays of North Carolina by means of the Dismal Swamp Canal in 1828 and with Delaware Bay one year later, while the Delaware River was connected with Raritan Bay in 1838. No exceptional engineering difficulties were encountered and comparatively few locks had to be constructed to overcome the rise and fall due to elevations. The Delaware and Raritan Canal required the construction of fourteen locks, but all of these were at the entrances to the canal, so that for the entire distance of forty-four miles navigation was not impeded by a single lock. The passage between Delaware and Chesapeake bays was made by the use of three locks, two of which were at the entrances; while the Chesapeake and Albemarle Canal, which has monopolized most of the trade of the Dismal Swamp Canal since its completion in 1860 has reduced the number of locks between the Chesapeake and the bays of North Carolina from seven to one. In fact, most of the proposals for the construction of ship canals along these routes assert that locks can be dispensed with entirely.

Notwithstanding the increasing demands of the coastwise trade, the dimensions of these canals have not been materially increased since their completion save in the size of locks. The reason for this is clear. The canals had to meet the competition of the railroads from the very outset for the trade which, at the time of their

organization, they hoped to monopolize. In fact, the Delaware and Raritan Canal was forced to enter into a union with the Camden and Amboy Railroad in the first year of its existence in order to prevent immediate abandonment of its charter privileges. Up to 1870 the canals enjoyed an increasing trade, but the financial return was not sufficient to warrant any undertaking for extensive improvements.

THE PRESENT DIMENSIONS OF COASTWISE CANALS AND LOCKS.

	Length.	Width.	Depth.	Rise and Fall.	Locks.		
					No.	Length.	Width.
	<i>Miles.</i>	<i>Feet.</i>	<i>Feet.</i>	<i>Feet.</i>		<i>Feet.</i>	<i>Feet.</i>
Delaware and Raritan. . . . .	44	80	7	150	14	220	24
Chesapeake and Delaware. . . . .	14	66	9	32	3	220	24
Dismal Swamp. . . . .	28	60	6	35	7	100	16½
Chesapeake and Albemarle. . . . .	14	80	7½	2	1	220	40

Since 1870, owing to the rapid improvement of the roadbeds of the railroads and the traction power of the engines on the one hand, and the lack of improvements of canals, on the other, the trade of the latter has declined rapidly. The traffic of the Chesapeake and Delaware Canal, which reached its maximum of 1,318,772 tons in 1872, has fallen to 639,548 tons in 1900, while the traffic of the Delaware and Raritan, which exceeded 2,000,000 tons in 1870, decreased approximately 1,000,000 tons in less than twenty years. Unlike most of the canals in other sections of the country, the coastwise canals, save the Delaware and Raritan, have remained independent, but they have abandoned all hope for revival through independent action and have turned to the Federal government for aid. It is the main purpose of this article to trace the relation of the Federal government to the coastwise canals.

The Chesapeake and Delaware Canal has special claims upon the Federal government for several reasons. The construction of a ship canal which would permit the passage of the largest vessels would be of great commercial and military value. It is the latter point which the promoters of the canal emphasized from the beginning in their appeal for national aid. It was first made in 1805,

when Gallatin recognized the force of the claim and recommended immediate subscription on the part of the National government. But the constitutional objections questioning the right of the Federal government to exercise such power were so strong that both the Senate and the House bills, introduced in 1810 for that purpose, failed to pass. After the War of 1812, a majority of the members of both Houses waived the constitutional objections and passed the Internal Improvement act of 1817, but it received the veto of Madison, who still clung to the constitutional objection. Monroe belonged to the same school as Madison, and it appeared that national aid was doomed for another eight years. However, he finally yielded, in 1824, and within the following five years the Chesapeake and Delaware Company received from the National government subscriptions to the extent of almost one-half million dollars. This sum, together with the subscription of \$175,000 made by the states of Pennsylvania, Maryland and Delaware, enabled the company to complete the canal in 1829.

When the period of decline in the traffic set in, the managers started a movement to arouse the interest of the federal government in the plan of constructing a ship canal. This movement began in 1871, when the National Commercial Convention memorialized Congress on this subject. The government engineers were instructed to examine routes and make estimate of cost which were published in the annual report of the chief of engineers for 1872. In the same year, Maryland chartered the Maryland and Delaware Ship Canal. This company claims the right of way on the Sassafras route from Kennedy's Mills, at the headwaters of the Sassafras River, to the Delaware River near Liston's Point. Ever since, this company has been a rival of the interests of the old canal in presenting to the general government its superiority as a ship canal route.

The River and Harbor bill of 1878 directed the survey of all the routes which a ship canal was likely to follow. The engineer's estimates and recommendations were to be based upon the construction of a canal 178 feet wide at low water and 100 feet wide 26 feet below mean water. The locks were to be 600 feet long and 40 feet wide. Three routes were reported which were designated as the Northern, Intermediate and Southern. The Northern route followed the Sassafras River already mentioned, the Inter-

mediate route entered Chesapeake Bay at the Chester River and Delaware Bay at the Broadkill River, and the Southern route made use of the Choptank River, Ferry Creek, Manticoke River, and Broadkill River. The primary purpose of these proposals was to furnish Baltimore with a shorter route to the sea, and hence the utilization for that purpose of the Chesapeake and Delaware Canal which follows the most northerly route was not even considered. Provision was again made, in 1882, for similar surveys with the same end in view.

It was not until the survey of 1894, made under the direction of L. Case, as chief engineer, that the Chesapeake and Delaware Canal claims met with favor. This report lays emphasis upon the coastwise trade as against the claim of Baltimore for an outlet to the sea, and concludes that for this purpose the most northerly route is the most desirable. Twelve years later (1906) Congress authorized the appointment of a special commission which was instructed "to examine and appraise the value of the works and franchises of the Chesapeake and Delaware Canal . . . with reference to the desirability of purchasing the said canal by the United States and the construction over the route of the said canal of a free and open waterway having a depth and capacity sufficient to accommodate the largest vessels afloat at mean low water," and also to make an estimate of the cost of the same from the surveys heretofore made under the direction of the War Department. Of all the other routes formerly proposed, the feasibility of the Sassafras route alone was to be considered by the commission. Their conclusions with regard to the advantages of the two were to be based upon commercial and military considerations.

The commissioners reported that both routes were feasible, but decided in favor of the Chesapeake and Delaware Canal because they believed that this route possessed slight military advantages and could be constructed for two million dollars less than the Sassafras Canal. The estimates included a valuation of the properties and franchises of the Chesapeake and Delaware Canal at two and one-half million dollars, and the franchises of the Sassafras route at one million dollars.

Another important link in the inland coastwise system in which the National government has been previously interested is the

Dismal Swamp Canal. The promoters of this canal were organized in 1787, and here again the abandonment of the enterprise was prevented by the subscription of \$200,000 by the National government, in the Twenties. Since that time the company has made several attempts to improve the canal. In 1856, \$150,000 were raised for that purpose, but the work was interrupted by the Civil War. In 1867, the company made another attempt to raise \$200,000 for the purpose of widening the canal from thirty to sixty feet, and increasing the depth from five and one-half feet to eight feet, which would make it possible to dispense with all locks save at the entrances. This sum, however, was exhausted while the improvement planned was yet in an unfinished state, and foreclosure was threatened. At this point, the company again appealed to the National government for aid upon the ground that the nation had an interest in this canal. The claim was made that the Dismal Swamp route was preferable to the Chesapeake and Albemarle route, which, since its opening in 1860, had monopolized most of the trade because it admitted boats of greater tonnage. An extended correspondence between the company and the national treasury department ensued between 1871 and 1878, setting forth the financial interest of the government in the canal. A survey was made in 1878, but beyond this nothing was accomplished.

Some twenty years later the River and Harbor Act (August 7, 1894) provided: "For the survey of the waterways through the sounds of North Carolina and for the survey of the Dismal Swamp Canal . . . with a view of obtaining a depth of nine feet and the necessary width of a ship canal . . ." The report of the survey, made in accordance with this act, showed that not more than two feet available water could be depended upon in periods of drought, and three and one-half feet in wet seasons, although the depth was much greater than this except at a few places. The construction of a canal with a depth of ten feet and a width of eight feet at the bottom was recommended, and the cost was estimated at \$1,711,380. This included the construction of three locks, the dredging of eighteen miles of canal, and the clearing of Croatan Sound and Paskuotank River. The report further declared that a sufficient amount of water could be obtained from Lake Drummond for the operation of the canal.

This survey, as the former ones, did not materialize in anything, and there is a great question whether it should in view of the fact that the Chesapeake and Albemarle Canal already offers a large part of the trade an opportunity to follow a protected inland route. This canal is eighty feet wide at the top and sixty feet at the bottom, and has a depth of seven and one-half feet. Although the entire route of the latter, including bays and rivers, is considerably longer than the former, the canal itself is six miles shorter and passage is made by the use of only one lock. Ever since its completion in 1860 it has taken most of the trade which formerly followed the Dismal Swamp route. In 1871, the number of passages through the Chesapeake and Albemarle Canal were twice those of the Dismal Swamp Canal, and in 1895, the tonnage (324,866 tons) of the former was almost fifteen times that of the latter. Unless the Dismal Swamp route can show a decided superiority, the improvement of the Chesapeake and Albemarle route will be the policy of the future, especially since there is only a remote possibility of government aid upon which the revival of the Dismal Swamp project must depend.

A third important link in the perfection of the coastwise system is the Delaware and Raritan Canal. In 1870, the traffic of this canal exceeded that of any other east of the Allegheny Mountains. The two million tons then carried were composed chiefly of coal shipments from Philadelphia and the outlet locks of the Delaware Division Canal at Well's Falls. When the canal was leased by the Pennsylvania Railroad in 1870, all the Schuylkill coal traffic under the control of the Philadelphia and Reading Railroad, which in that year amounted to 746,661 tons, had to seek either the railroad or the ocean voyage for points to the north and to the east. As a result, the tonnage of the canal decreased by one million within the next twenty years, while at the present time it is practically abandoned.

This condition has been reached in spite of the fact that no other waterway has such a commanding position with reference to the coal mines of Pennsylvania and the coastwise trade. In 1892, the Committee of Commerce estimated the sound traffic at 3,313,110 tons, the Hudson River trade at 7,642,282 tons, the resources of the Jersey rivers tributary to Raritan Bay and the Delaware and branches at more than 12,500,000 tons, and the traffic

of Chesapeake Bay at 6,619,424 tons. In addition to this, the committee emphasized the fact that the military advantages of the proposed canal would be "the first link of an interior waterway safe from military attack and reaching from New York Bay to Florida and thence to the gulf." But, notwithstanding this passing interest of the federal government and the support of numerous associations in Pennsylvania, New Jersey and New York, the immediate future holds out little hope that the proposed ship canal will be undertaken by the national government or by private enterprise.

The improvement of the three canals which have just been described to the dimensions of ship canals would furnish a protected voyage for the coastwise trade from Cape Cod to the Carolinas. Numerous movements have been started to extend this system by the construction of canals through Florida and Cape Cod. The latter promontory is only ten miles wide at a number of places, and a cut through it is easy of construction; in fact, the claim is made that dredging alone will accomplish the result. And yet, for several centuries, this narrow neck of land has been permitted to increase the distance between Boston and points to the West and South between seventy and one hundred and twenty miles, and to force the commerce through shoals and fogs which, in point of danger, are only second to those of Cape Hatteras. The record of loss for twenty years ending in 1895 is 63 lives and 137 vessels, the value of the latter is estimated at one million and a half dollars. In the short period of four years following 1895, twenty-seven lives were lost and twenty-seven vessels valued at a quarter of a million dollars, were wrecked. This constitutes an average loss of \$6,500 per month, and three vessels and three lives for every two months.

The amount of traffic which has been forced to follow this circuitous and dangerous route has always been great and promises to increase steadily in the future. The enlarged Erie Canal will connect the sound with the lakes of the West, and the completion of the proposed Cape Cod ship canal will enable Boston to compete for the trade of the West. The claim is made that the freight which railroads bring to Jersey City, and which is bound for Boston, will be transported at one-third the rate now charged by railroads. To this we must add the advantage to the extensive commerce with the ports to the south of New York City.



In view of these facts, the postponement of completion of this canal to the opening years of the Twentieth century constitutes one of the greatest surprises in the history of canal construction, especially since the proposed cut has received attention for more than two centuries. Agitation was started by the little town of Sandwich, in 1676. The project was encouraged by a survey under the direction of the General Court of Massachusetts, in 1697, and again, in 1776, when General Machin was engaged to make a survey. The Revolution intervened and the plan was postponed until 1824, when the federal government engineers were directed to make surveys. Another federal survey was ordered in 1860, but again postponed until 1875, when General Foster, of the United States Engineers, made a thorough examination and recommended the abandonment of the former lock navigation proposals in favor of a deep-cut ship canal. A number of favorable congressional reports followed some ten years later, but all the work of the national government in the nineteenth century, like the agitation of the colony of Massachusetts in the eighteenth century, came to naught.

Finally, a few enterprising individuals formed "The Boston, Cape Cod and New York Canal Company." A charter was obtained from the Commonwealth of Massachusetts, permitting a capitalization of \$6,000,000. Under the direction of this company, surveys have already been made and a route selected which, it is believed, will be free from rocks. The managers are "confident that two years and a half will witness the completion and opening of the waterway."<sup>1</sup>

The full value of this coastwise system will not be realized until a canal is constructed across Florida. Agitation in favor of such a canal began as early as 1826, when the general government ordered surveys of two routes for the purpose of connecting the Atlantic coast trade with the Mississippi. One of the routes surveyed followed the St. Mary's and Apalachicola rivers a distance of some 200 miles, while the second route, about fifty miles shorter, proposed to utilize St. John's River. The report of the engineers that the canal would have to be 9 feet deep and the locks 250 feet long and 50 feet wide in order to admit the boats of the Mississippi—which dimensions were double those

<sup>1</sup>Fergus Crane, *The Cape Cod Canal* (Eclectic Mag. 146, 277-82).

planned—did not encourage immediate activity toward the realization of the proposal.

In 1852, Congress ordered a survey of a route which was to utilize the St. John's and Hillsboro rivers, whereby it was proposed to cut down the distance to 115 miles. The canal was to be 6 feet in depth and the locks 116 feet in length, and hence, the same objection applied to this plan as to the former. Several surveys were again made in the Seventies and the Eighties resulting in the claim that a canal with twelve feet depth could be constructed by following the Valley of the Oklawaha and connecting it with the lower part of the St. John's. This route would necessitate a canal fifty miles longer than the one proposed in the former survey, but it would shorten the distance across Florida by twenty miles. Since that time, there have been several congressional reports, but all their recommendations are based upon previous surveys.

This brief survey of the history and present status of the above canals brings out clearly several important facts. The financial condition of the canal companies has at no time during their history permitted them to enter upon plans for improvements providing for material enlargement of the canals beyond their original dimensions. Hence, since the beginning of the decline in the traffic in the Seventies, the companies have looked to the Federal government to assume direction and financial responsibility in all proposed improvements. The Federal government has accepted this responsibility to the extent of ordering numerous surveys which have been set forth in voluminous reports. But not a single step has been taken beyond this point, notwithstanding the fact that the reports have declared the proposed works entirely feasible.

The cause of this situation is quite obvious. The government is confronted with claims from all sections of the country. Many of these are worthy, but not all of them can be constructed at one time. It rests with the advocates of favored schemes to come to some agreement resulting in the selection of some specific improvements to be constructed at one time. This has not been done in the past, and as a consequence the government has doled out small sums to a vast number of schemes without any results. Nowhere is this baneful effect of particularistic action more clearly shown than in the methods employed during the last three decades toward the perfection of the Atlantic coastwise system by government

aid. This system presents a distinct unit, but up to the present time each canal company has pushed its claim separately.

However, we need not conclude this article with such a pessimistic view. On November 19, 1907, there assembled in Philadelphia delegates from all the Atlantic states to consider the question of united action for the realization of an inland water route from Maine to the Carolinas. On the following day, the conference formed a permanent organization called "The Atlantic Deeper Waterways Association." Several decisions of this conference are significant. They adopted resolutions advocating the construction of the entire system by the Federal government, and lamented the fact that the construction of the proposed Cape Cod Ship Canal had been left to private enterprise, while several of the delegates voiced the sentiment that the entire system should be free from the payment of toll. The association, however, showed that they were not prepared to recommend the completion of one link at one time, for they voted down the proposition that the Chesapeake and Delaware Canal should be converted into a ship canal before undertaking other works.